CLAIMS

What is claimed is:

1. An optically responsive element capable of altering incident light characterized in that it comprises one or more transparent, paramagnetic elements that are responsive to a magnetic field and a means for providing the magnetic field, the one or more transparent, paramagnetic elements comprising in whole or part a transparent, paramagnetic polymer composition comprising a polymer complexed with a sufficient amount of one or more rare earth ions selected from the group consisting of elements 64 – 69 to provide a polymer composition magnetic mass susceptibility of greater than 20 x 10^{-6} emu/g measured at 298°K.
2. The optically responsive element of claim 1 wherein the rare earth ions are selected from the group consisting of elements 66-67.
3. The optically responsive element of claim 1 or 2 comprising an optical switch for use in optical fiber communication systems comprising:
   (a) a solid article capable of moving into and out of a path of incident light such that the when the solid article is moved into the initial path of incident light, the incident light passing through the solid article is redirected to a different path; and
   (b) a source of magnetic field to move the solid article into and out of the path of incident light.
4. The optically responsive element of claim 1 or 2 comprising an optical switch for use in optical fiber communication systems comprising:
   (a) an input optical fiber for transmitting an incoming light signal wherein the optical fiber comprises the composition of one or more transparent, paramagnetic polymers that have a magnetic mass susceptibility of greater than 20 x 10^{-6} emu/g measured at 298°K;
   (b) one or more output optical fibers ; and
   (c) one or more sources of magnetic field to move the first optical fiber to align with one of the output optical fibers.

5. The optically responsive element of claim 1 wherein the polymer from which the transparent, paramagnetic polymer is made is a non-ethylene containing polymer.

6. The optically responsive element of claim 3 wherein the polymer from which the transparent, paramagnetic polymer is made is a non-ethylene containing polymer.

7. The optically responsive element of claim 4 wherein the polymer from which the transparent, paramagnetic polymer is made is a non-ethylene containing polymer.